



# QST NFL



*Sharing information of interest to Radio Amateurs in North Florida*

Volume 7 Issue 7

[www.arrl-nfl.org](http://www.arrl-nfl.org)

July 2020

## Lake Amateur Radio Association Field Day

Frank Anders, KK4MBX

LARA members came out in numbers to support our Field Day adventure this weekend. Our usual location was not available this year and we needed to work from our



clubhouse grounds. It is a relatively small lot, and we needed to forgo the sanding antennas, and mount temporary antennas for the field day operation. We were lucky to have access to a county generator to provide the emergency power we needed.

We survived incredible heat and humidity to set up A station using small teams for each antenna to follow CDC Guidelines for safety. These same teams returned on Sunday afternoon to break down the stations and store away the antennas and other equipment for next year.

We operated three stations in our clubhouse, one in our ARES Trailer and one in a member's RV. With that we could provide access to the operational period for those who wanted to be part of the action and still maintain adequate social distancing.

Special Thanks to our Event Chairman, Steve, KT4Q, and to Al, W4ALR, and Jason, K4AUS, for their incredible help and support throughout the planning and execution of the event and to the Florida Contest Group for partnering with us on this effort.

Pictures on next page...

## Who's Reading QST NFL?

Marty Brown, N4GL, Editor

There's lots of high-tech ways to find out who's reading QST NFL, but I'd like to hear from you! Please click on the email link below, and let me know. All comments are appreciated.

[n4gl.marty@gmail.com](mailto:n4gl.marty@gmail.com)

## The Annual 13 Colonies Special Event

2020 Event Dates / July 1 (9AM Eastern) to July 7 (Midnight Eastern)

(July 1, 2020-1300 UTC to July 8, 2020-0400 UTC)

## Directory of Traffic Nets

Provided by Gordon Gibby, KX4Z

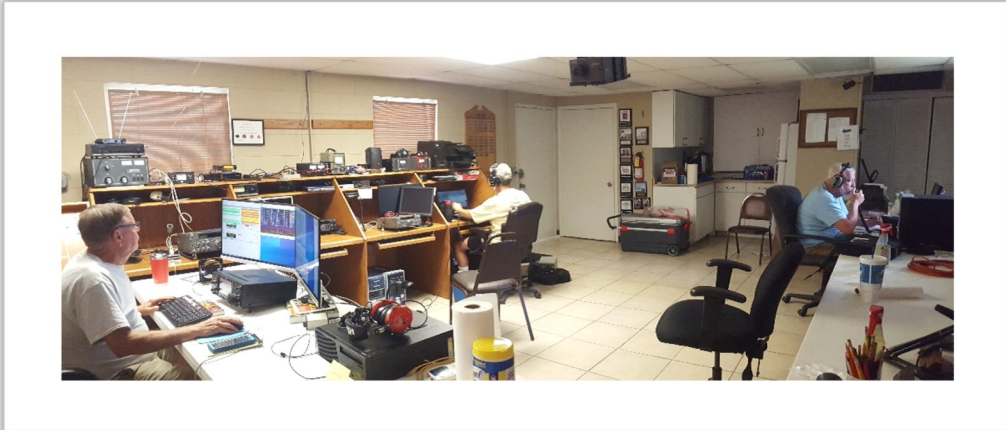
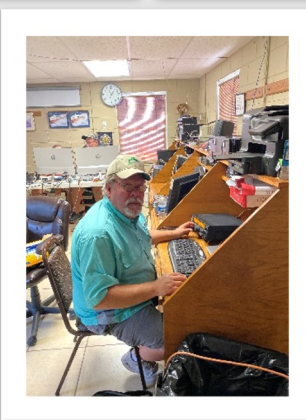
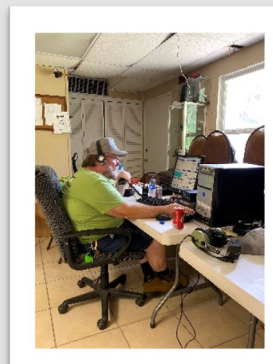
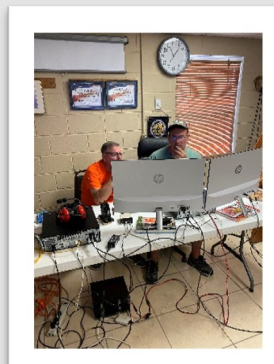
<http://radio-relay.org/wp-content/uploads/2020/06/>

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Email your QST NFL input to [n4gl.marty@gmail.com](mailto:n4gl.marty@gmail.com)  
Marty Brown, N4GL, Editor

## Lake Amateur Radio Association Field Day 2020 (continued from front page)





## Alachua ARES® 2020 Field Day

by Gordon Gibby KX4Z

With sanitizing wipes, soap and hand cleanser everywhere, Alachua County ARES® was able to hold a wonderful Field Day in spite of COVID-19. Thirteen or more turned out for the actual Saturday/Sunday event, but many more participated in various ways.

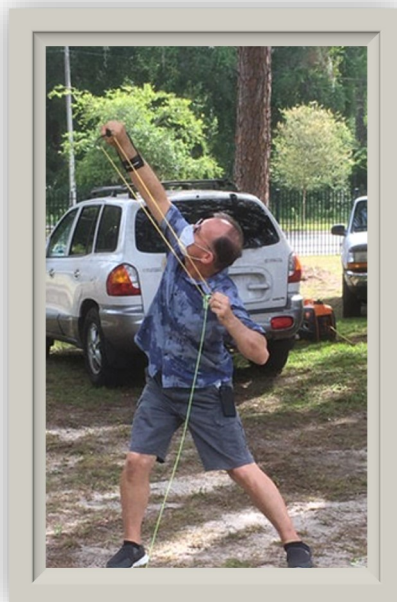
We took guidance from one of our members, John Trites NO5X, who was familiar with clubs back west that do “dress rehearsals” to work out problems. As an ARES® supporting club (North Florida Amateur Radio Club) we used the FEMA Incident Command System to divvy up the work, with a volunteer staff of incident commander, PIO, Planning Chief (John Trites NO5X), Operations Chief (Leland Gallup AA3YB, with two deputies), Logistics Chief (Rosemary Jones KI4QBZ) and Finance/Accounting Chief (Susan Halbert KG4VWI). Everyone pitched in with ideas and contributions, and John produced a magnificent ICS-201 incident action plan that really laid out every step of the way that would be needed to move and assemble all the gear, and accomplish everything needed to get Bonus Points and successful testing and operation.

[https://qsl.net/nf4rc/2020/Draft3NF4RC\\_2020FD\\_IC201\\_R2.pdf](https://qsl.net/nf4rc/2020/Draft3NF4RC_2020FD_IC201_R2.pdf)

**Dress Rehearsal.** Our group had never done a field day of our own. We literally did a dress rehearsal, the Saturday before, including all vehicles, the microwave mesh network, two complete stations, travel trailer, HF antennas, tents – everything. Issues were identified and solved.... That made setup on actual Field Day require only 2 hours.

**Station Interference** We made measurements of the coupling between the HF antennas, which turned out to be far less than expected: about -70 dB, -80dB and -100 dB on 80/40/20 meter bands. A bit of math and we calculated that there was no danger of damaging receivers from 150 watts output at either station. We also tested our newly-constructed band-pass filters – and found that we could easily work on adjacent bands, and even at opposite ends of the 3.5-4 MHz band, without problems.

**Emergency Power** It takes an “act of Congress” and a year’s notice to get the generator tested at our facility, meaning that we would literally have to run the EOC station on emergency power for the entire operation – but you can’t pull extension cords through the facility’s secure doors! And we wanted to run 150-watts output from ancient Heathkit SB-200’s to allow our transceivers and band pass filters to operate at 20-30 watts continuous digital.... So we planned triplicate AGM batteries and a Xantrex 2kW sine wave inverter, with AC filter. There were multiple issues with all of that, and we became familiar with 75-amp Power Poles, and the difficulties of using industrial RFI filters with consumer GFI outlets.... In the process it was discovered that multiple of the facility’s backup ham radio 12V batteries were no longer functional – and the Sheriff’s dept. picked up the tab for three new ones on very short notice!



*In his day job, Col. Huckstep W4JIR manages a vast law enforcement operation; here he's putting up a VHF/UHF antenna the old-fashioned way.*



*2kw sine wave inverter -- required 3 batteries on 75A power-poles*

*Continued on next page...*

**Training** We were able to bring many of our participants up to speed, even during the rehearsal, on operation of HF linear amplifiers that require tuning, automated antenna tuners, and FT8 techniques. All of that was amplified several times with 6 planned educational sessions on Field Day Saturday between 10AM and 2PM, mentoring participants on each portion of the activity.

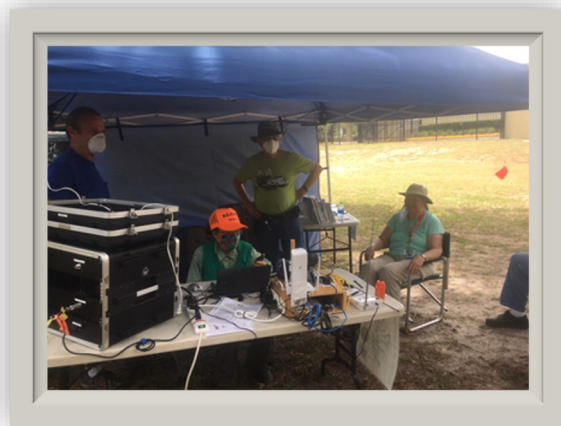
**PAYOFF** Wow, did this ever pay off!! A chief goal was to bring participants up to higher levels of confidence and expertise. **Encouragement was the driving theme of our operation.** We had multiple participants with no significant HF experience who suddenly found themselves doing voice HF operations, or becoming FT8 gurus! Everyone got a lot more familiar with the N3FJP logging software and the intricacies of WSJT-X software. With supervision/mentoring we had a Tech busy making 40-meter FT8 contacts like a pro!

**PIO Bonanza** Jeff Capehart W4UFL and Jim Bledsoe KI4KEA on our PIO staff scored home runs, with two TV camera-persons showing up during and after the furious thunderstorm on opening Saturday – we spent a full hour with each reporter giving a thorough explanation of amateur radio's contributions and were rewarded with a 2+ minute video on TV-20 WCJB (Landon Harrar) giving a great overview of our operations; more reporting is expected from WUFT-TV Taylor Levesque. (See: <https://www.wcjb.com/2020/06/27/amateur-radio-operators-take-part-in-field-test-day/>)

**Digital Radiogram Traffic.** Knowing that bands would be crowded, we took advantage of RRI / WINLINK radiograms and messages to handle bonus point radiograms, which we normally do by VHF packet. But this year we branched out to microwave point-to-point for this duty, and learned how to get the KISS protocol to operate over a tcp/ip direct connection between two Ubiquity transceivers using AREDN software to get them to valid ham radio frequencies. Susan Halbert KG4VWI, Jeff Capehart W4UFL, Mike Ridlon K4MVR and others got in on that big success. We used a deployable WINLINK raspberry-pi gateway as the target gateway. Everyone learned a ton.

**Charging & More Charging!** We charged those triplicate banks of car batteries in every way we could, including two large solar panels mounted on the sides of a pickup truck bed, with inexpensive MPPT controllers in the shade below, giving a 10A charge to two batteries simultaneously. But it was Duke Bailes KM4EVZ who saved our bacon with an industrial charger that could pump out 30A for hours. All day and night we were charging batteries and the current draw to run the 572-B amp was "a bit more than expected."

And we even got three person's taskbooks updated!



*Ever popular PIO shade-tent, courtesy of Rosemary Jones KI4QBZ, with Sheriff's go-box and microwave/vhf WINLINK operation Susan Halbert KG4VWI handled the microwave Winlink*



*Wendell Wright KN4TWS is an unstoppable digital points machine....worked stations until*

**Relationships.** The County Sheriff visited just before tear-down and we had a very useful conversation, showing off the impressive shelter go-box, one of seven that her Department has already provided, and explaining our SHARES capabilities as well. *So many people worked SO HARD together for so long to make this work!* Three of us were there for the entire 24+ hour operation and the stories shared and good times had will serve us well in future work together.



## Software-defined Radio

by Bert Garcia N8NN and Pete Castella N4CQN

For more than 100 years the equipment required to decode and process radio signals has been analog circuitry. While Software-defined Radio (SDR) technology is not new, having been developed more than 30 years ago, the ability for hams to affordably experiment with SDR has only been possible for less than a decade. The first commercial single-chip RF processor became available in 2009 (1). In 2012 the first really cheap SDR based on the RTL2832U chip became available (2) and now costs less than \$25. Powerful personal computers (you're using one right now!), inexpensive hardware, and free software have made SDR available to every ham. This article describes how you can add an SDR receiver to your station.

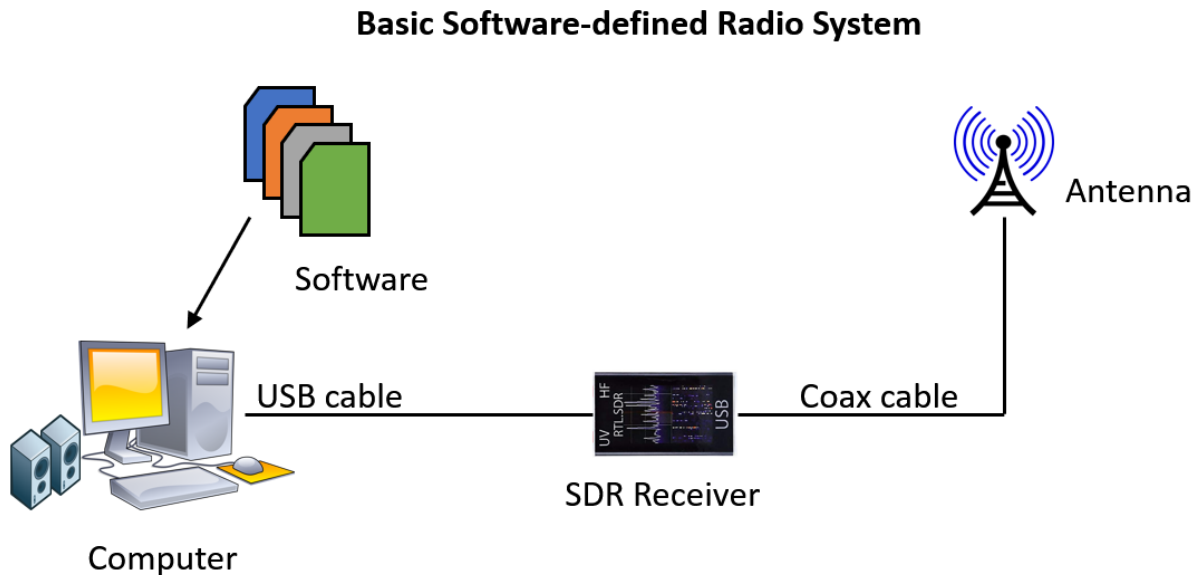


Figure 1: A basic software-defined radio system.

The basic SDR system in Figure 1 is built around an inexpensive SDR receiver connected to an outdoor antenna and using free software on your personal computer. Typically, the SDR is powered by the USB cable, and the antenna connector is a female SMA. Here is a list of affordable SDR receivers for ham use:

1. RTL-SDR RTL2832U Dongle, <https://www.amazon.com/>, \$25
2. Nooelec Lana, <https://www.amazon.com/>, \$30
3. SDRplay RSP1A, <https://www.sdrplay.com/rsp1a/>, \$120
4. Airspy HF+ Discovery, <https://v3.airspy.us/>, \$170
5. HackRF One, <https://www.adafruit.com/>, \$340

The \$25-\$30 SDRs usually only cover about 20 MHz to 2 GHz, having poor performance on many of the HF bands. An up-converter can solve this problem, but now the cost has approached that of the SDRplay and Airspy receivers which cover all the HF bands in addition to VHF/UHF. The HackRF One is sold as a laboratory instrument and includes a 20 mWatt transmitter and has slipped up and out of the affordable category.

**This article can be found in it's entirety on the ARRL NFL website: [arrrl-nfl.org](http://arrrl-nfl.org)**

Click here to continue reading: <https://arrrl-nfl.org/kb-tech-info/n8nn-n4cqn-sdr/>

Or, <https://tinyurl.com/yd4foosk>.



## Microwave MESH to Solve Field Day Logging Problems

by Gordon Gibby KX4Z and Earl McDow K4ZSW

Alachua County ARES® / North Florida Amateur Radio Club was unexpectedly permitted to carry out a Field Day mission this year as category 2F (two transmitters) at the Alachua County Emergency Operations Center (EOC), as the county re-opened. However, a significant obstacle for tracking logging was the distance between the two transmitters (just inside the 1000 foot diameter allowed) and the intense security needs of the county government facility. We needed a network connection for the N3FJP logging software, but could not use the secure EOC network, and can not penetrate the walls of the facility with cable, nor pull cable through the Sheriff's busy parking lot. One station would be the established ham radio room of the EOC; the other in a travel trailer in a grassy area 250 yards north the Sheriff's building/parking lot.

We turned to our previous experience with 2.4 GHz microwave mesh Ubiquity products (available off the shelf from Amazon). These would likely solve the problem even with their consumer Part 15 software, but our group had multiple 600 mW (28 dBm) transceivers reformatted with ham radio AREDN operating software. This allowed us to operate the private wireless net on a Part 97 frequency (2.397 GHz) not accessible to most consumer systems, avoiding concerns for interference.

What would the signal loss be through the fortress-like (hurricane resistant) walls of the Emergency Operations Center?

A team led by John Trites NO5X withstood the June heat and made multiple measurements of the loss through the reinforced walls and the distance across



the bountifully treed parking lot between operating station locations. (The Ubiquity NanoStations have an internal antenna of approximately +10dBi gain; the Ubiquity Bullet product includes a male N-connector and we had access to a +13dBi 2.4Ghz Yagi and a +18dBi parabolic.

Would the path budget work with two, or would we need three mesh transceivers? We measured:

- Transmitter output: +28 dBm;
- Antenna gain (each end): +10 and +13 dB;
- 250 yard free space loss ("Pasternack free space loss calculator"): 87 dB;
- Background noise: -95 dBm.

This all indicated we would have an acceptable Signal/ Noise ratio, particularly if we went with an intermediate battery powered mesh relay transceiver as recommended by John Trites NO5X. The AREDN mesh firmware automatically "relays"; we did not have to do anything except provide 24V DC to power each device.

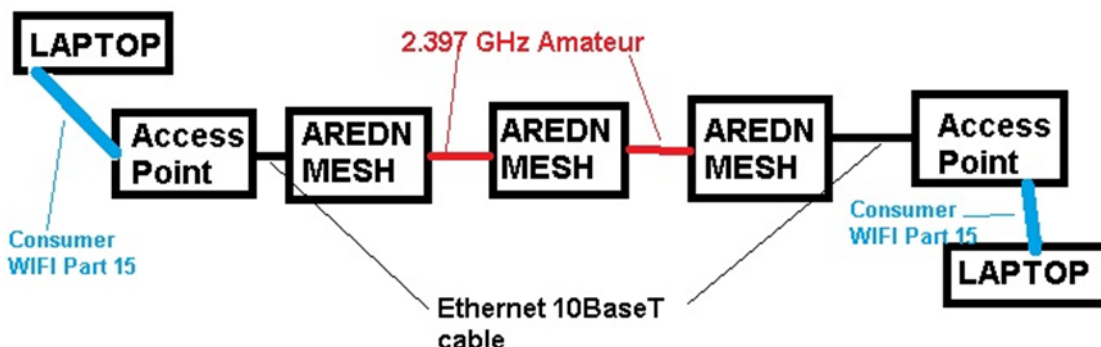


Figure: Diagram of Field Day AREDN MESH microwave network.

Continued on next page...

The Ubiquity transceivers act much like a home WiFi router (their ostensible consumer purpose) – they route tcp/ip packets from their wired side, to their 2.4 GHz side. To reduce RFI interference and tripping hazards, we did not want to use wired cables to our laptops. We added a simplifying wrinkle by obtaining \$15 Tenda home consumer WiFi routers and using their consumer administrative options to place them in “access point” mode - where they merely pass packets from their wired side to their consumer Part 15 WiFi side. Now we could use the standard WiFi connections on our logging computers to access the Tenda router at each end, which passed packets to the higher-powered Ubiquity Mesh system, and then made access possible at the far end through another Tenda router placed into access point mode.

It worked!! The AREDN software showed that we had Signal/Noise ratio between the far ends of roughly 20dB (less than we are comfortable with, as cars, people or rain in-between could disrupt our logging) and far greater on each portion of the link thanks to the middle relay unit which was powered by storage batteries, and situated in a tree. (Actually on the top of an 8 ft fence.)

**Our Field Day logging system worked perfectly, with excellent Signal/Noise ratios**, and even survived an electrical storm and down pour - intact. Throughout 24 hours of operating, the major difficulty experienced was a couple of disconnections of laptops from the end-point consumer WiFi routers (acting as access points); the microwave mesh portion was flawless.



## Jacksonville Amateur Radio News

Billy Williams, N4UF

**JULY MEETING:** CBS 47/Fox 30 Chief Meteorologist Mike Buresh presents his outlook for the upcoming hurricane season at the North Florida Amateur Radio Society (NOFARS) meeting on Thursday, July 9th. Mike has visited NOFARS each summer since coming to Jacksonville over a decade ago. The meeting begins at 7:00PM at Hogan Baptist Church, 8045 Hogan Rd. Thanks to Rev. Peter Copeland KK4WAY, spacious accommodations at the Church allow ample room for proper spacing.

The June 14th NOFARS meeting featured John Reynolds, W4IJJ speaking on whole-house type generators. Topics included load calculations, types of fuel, questionable contract terms, unit placement, permits required, proper connection to home wiring and price ranges.

**COMMUNICATIONS EXERCISE:** Duval County ARES members participated in the Red Cross EmComm Nationwide Radio Simulation on May 30th. They added an element that focused on local served agencies. Brian Schultheis, K4BJS filed this report:

The four-hour drill started at 9AM as the group implemented an Incident Action Plan (IAP) to simulate opening of three Red Cross-managed evacuation shelters.

The local simulation included the Health & Medical section and the Communications Unit of Jacksonville's Emergency Operations Center. A Resource Net helped manage Duval ARES personnel and equipment. The Winlink system handled four formal messages sent to Red Cross Disaster Operations HQ using their format. The exercise helped train shelter radio operators in using Red Cross general message forms and disaster requisition forms. They also originated test messages to Health and Medical at a simulated Emergency Operations Center.

Objectives focused on training operators to properly follow Jacksonville's Comprehensive Emergency Management Plan (CEMP) and Duval ARES' responsibility under Mass Care, Shelter and Emergency Communications Plans.

Participants completed all 17 training scenario objectives, including potable water shutoff, personnel accountability, establishing simulated communications in support of Jacksonville Fire Rescue Department (JFRD) command and control operations, communication support to Jacksonville's Florida Department of Health office along with more mundane shelter management issues.

## Building Bandpass Filters: Big Success

by Gordon Gibby KX4Z



Our ARES® / North Florida Amateur Radio Club group decided to give a go at Field Day when we realized that the nation was opening back up again, and received permission to use the EOC. Could we have TWO stations? From experience, there is **interference** audible in the receivers even with stations on different bands.....

Bandpass filters may allow us to avoid phase noise and overloading problems. The same might be true in an emergency when you need both digital and phone ops, for example. The ARRL has a nice simple article on building Butterworth 3- or 5-pole filters:

<https://www.arrl.org/files/file/Technology/tis/info/pdf/8809017.pdf> Looked easy enough! I laid out a printed circuit board that would connect directly to SO-239 connectors, and fit underneath a paint-can lid (very cheap \$5 shielded enclosure!) 10 boards arrived in 6 days for < \$50. (Free Gerbers: <http://qsl.net/nf4rc/Tech/BandpassFilterPCB.zip>)

5% mica 500V/1kV caps came from Digikey – order extra 100pf to adjust tuning next time! One of our members, John Trites NO5X designed us some Chebyshev2 narrow filters for 80- and 75-meter operation, hopefully allowing us to put TWO stations on the 3.5-4.0 MHz band, one at each end.

I have a Siglent spectrum analyzer and I thought building and tuning these filters would be a breeze.

It wasn't. I had to learn some tricks, and there are still some things I can't explain.

An analog antenna analyzer (MFJ) turned out to be incredibly helpful. FIRST calculate the resonant frequency for each series- or parallel-combination of L/C. (Look up the formula or use an online calculator.) It seems that in these designs, there is generally ONE common resonant frequency for **all** the pairs of a given filter – and it isn't in the middle of the passband either!

DON'T connect everything in the circuit right off-- instead pair up the series and parallel combinations. Using the antenna analyzer, find the point of HIGHEST impedance for the parallel, and the minimum reactance (R will be 0) for the series one --- then adjust windings or capacitors to get resonance at desired frequency. Not hard but takes a little time! This was my big discovery. My filters were very close to correct when I did this step. Some of my capacitors or inductors were way off from predicted, so a little jockeying was needed!

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**40 meter 5-pole (2 section) Butterworth filter.** T-80-6 iron powder toroids, enameled #20 wire. SO-239's solder right onto the board using short sections of stranded or solid wire, 6-32 screws can be added for more rigidity. Easy to cut 5/8" holes in thin paint-can top with simple wood-boring bits. Board mounts on underside of paint can lid. Sand off coating

After getting the resonances pretty close, connect up the sections, and put it on the spectrum analyzer. If the response isn't where you want, using a small capacitor of about 10-20% to temporarily add in parallel with that of each section allows you to "move the bumps" on the trace and understand which section is high or low in frequency and then make appropriate adjustment. For the 10 pf or so needed to bump the low-pf series capacitors, I used a few inches of insulated, twisted wires. You could also use a few inches of coaxial cable.

**Don't forget to test the SWR through the filter** – put a 50 ohm dummy load on one end, and use that antenna analyzer to test from the other end – the Butterworths in my case tended to look pretty good on the first try; the narrower Chebyshevs in my case sometimes needed a little tweaking of a section or two.

**RESULTS WERE FANTASTIC:** I ended up with 5-pole filters that easily gave 50+ dB isolation between harmonically related bands; and 16-20 dB isolation between the ends of the 3.5-4.0 MHz band (3.6 versus 3.9 MHz) The 40 meter Butterworth passes 6-8 MHz and just kills anything beyond that, for example. The 80/75 filters were a bit of effort to tune, but allow operation at each end of this large band. Subsequent testing at our Field Day Dress Rehearsal indicated huge success. We use these filters on the transceiver OUTPUT before going into the linear amplifier INPUT, so the filter passes only 20-30 watts, never gets hot. The losses of the filter (roughly 0.75-1.75 dB depending on my effort) are easily handled by just upping the exciter power by a few watts to the linear. We easily get 150 watts output (our desired class) on all bands this way. I put a graph on each can of the filter and SWR response.

## *The Annual 13 Colonies Special Event*

2020 Event Dates / July 1 (9AM Eastern) to July 7 (Midnight Eastern)  
(July 1, 2020-1300 UTC to July 8, 2020-0400 UTC)

## ***FCC Testing Information***

### **4 Corners Radio Club, Davenport FL**

- First Saturday
- 10:00 AM
- Polk County Firehouse, 50945 US 27
- Walk-ins welcome
- Info: WA2FRW@aol.com

### **Hog County Amateur Radio Association, Bushnell FL**

- First Saturday, 11:00 AM
- Cross Connection Church, 1451 West County Road 476, Bushnell, FL 33513
- Info: sumterVE@gmail.com

### **Lake ARA, Leesburg FL**

- Monthly on the 3rd Saturday, prior to monthly meeting. (Except December)
- 8:00 AM
- [LARA Clubhouse](#) (11146 Springdale Ave, Leesburg – off of CR 473)
- For more information and registration, contact:  
Dave Templeton N4NG, 386-804-2806  
[n4ng@icloud.com](mailto:n4ng@icloud.com) in advance of the meeting.

### **Lake Monroe ARS FCC Testing, Sanford FL (LMARS)**

**Cancelled until further notice due to loss of venue because of COVID 19**

- For more information and registration, contact Bob Cumming, W2BZY, 407-333-0690 or [w2bzy@cfl.rr.com](mailto:w2bzy@cfl.rr.com)

### **Milton Amateur Radio Club, Milton FL**

- Second Thursday of each even numbered month
- 6:30 PM
- Walk-in
- West Florida Hospital Rehab Institute, 8383 N Davis Hwy, Close to Johnson and N. Davis
- Info: Robert Speser, nb8s@icloud.com

### **Orlando ARC FCC Testing (OARC)**

**Cancelled until further notice due to loss of venue because of COVID 19**

- Info: <https://oarc.org/events-ve-testing>

### **QCWA Chapter 45, Orlando FL**

- Second Thursday
- 11:00 AM
- Golden Corral, 5535 S. Kirkman Ave, Orlando
- Walk-ins welcome
- Info: WA2FRW@aol.com

### **Silver Springs Radio Club, Ocala FL (SSRC)**

- Go to <http://k4gso.us/class/> to signup for classes
- Go to <http://k4gso.us/test-signup/> for testing. Testing is held on the 2nd Tuesday of odd months at 7 PM.
- Note <http://k4gso.us/ncvec605/> is requested to be filled out before you show for testing. It is best to download the form and open it as a PDF so you can fill in the blanks.

### **Suwannee ARC, Live Oak, FL**

- First Tuesday of the month prior to the meeting
- Saturdays available with advanced notice
- N4SVC, 9707 58th Street, Live Oak, FL 32060
- [www.suwanneearc.org](http://www.suwanneearc.org) for more information

### **Tallahassee Amateur Radio Society (TARS)**

- First Tuesday of each even numbered month
- 7:00 PM
- American Red Cross, 1115 Easterwood Drive, Tallahassee, FL
- Contact TARS : [tallyamateurradio@gmail.com](mailto:tallyamateurradio@gmail.com) with questions
- Info: <http://www.k4tlh.net>

### **West Volusia Amateur Radio Society**

- Second Saturday of each odd numbered month
- 9:00 AM
- Elks Lodge, 614 S. Alabama Avenue, Deland, FL
- Info: <https://westvars.org/testing>

***Due to the COVID 19 re-  
strictions on gatherings,  
please check with the or-  
ganizations listed for  
changes or cancellations.***

**Remember:** Bring photo ID, CSEs, copy of current license, exam fee in cash, \$15 exact change. Large print exams are available.

## NFL Web Site

For net, hamfest and other events go to [www.arrl-nfl.org](http://www.arrl-nfl.org). Webmaster Brian McClure, NW4R, maintains an up-to-date and detailed listing of all NFL nets and activities. If you need to make a change to an existing net or activity, or add a new one, you can contact Brian on the website.

## NFL Officials

**Section Manager** – *Kevin Bess, KK4BFN*

**Assistant Section Managers**

*Joseph D. Bushnel W2DWR*

*John C Reynolds W4IJJ*

*Dave Davis WA4WES*

*Jeff Capehart W4UFL*

*Neil Light KK4VHX*

*Ray Crepeau K1HG*

*Steve Szabo WB4OMM*

**Section Emergency Coordinator** – *Karl Martin K4HBN*

**Section Public Information Coordinator**— *Scott Roberts KK4ECR*

**Assistant SE Coordinator** – *Dave Davis WA4WES*

**Section Technical Coordinator** – *Frank Haas KB4T*

**Affiliated Club Coordinator** – *Appointment Pending*

**Section Traffic Manager** – *Helen Straughn WC4FSU*

**Official Observer Coordinator** – *Robert Leasko WB8PAF*

**State Government Liaison** – *Darrell Brock N4GOA*



### Newsletter of the Northern Florida Section of the ARRL

1. Spread the word about our website [www.arrl-nfl.org](http://www.arrl-nfl.org) and **QST NFL** on your club web-site, in a newsletter or at a meeting.
2. Send a write-up and picture of your next activity.
3. Make sure you, or the appropriate member of your club is on the email reminder list.
4. Contact: Marty Brown N4GL, [n4gl.marty@gmail.com](mailto:n4gl.marty@gmail.com)

**QST NFL** is a monthly publication of the ARRL Northern Florida Section. **QST NFL** is intended for wide distribution within the NFL Section, including club Leaders and all licensed Amateurs in Florida. A current issue of this publication can be found at the ARRL Southeastern Division web site, Northern Florida Section. [www.ARRL-NFL.org](http://www.ARRL-NFL.org) Opinions expressed by writers are their own, and may not express the positions of the ARRL. Submissions may be made to the editor, Marty Brown, N4GL.MARTY@gmail.com.